Abstracts

A Low Phase Noise MMIC/Hybrid 3.0W Amplifier at X-Band

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A power amplifier characterized by low phase modulation of the signal is important for Doppler radar systems in signal detection. Phase noise performance of -145 dBc/Hz measured at 10 kHz away from the earner has been achieved with a MMIC/ hybrid FET 3.0W X-Band amplifier. A comparison with other power amplifiers such as IMPATTs, TWTs, and magnetrons shows that the MMIC/hybrid power amplifier has a lower phase noise level. It was found experimentally that the non-linearity operation of an amplifier and the instabilities of DC regulators are the primary sources of phase noise corruption. Circuit descriptions, performances and discussion of the phase noise behavior of individual stages and of the integrated amplifier module are presented.

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